PROJECT NUMBER: 1307
PROJECT TITLE: Reconstituted Tobacco Development
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PERIOD COVERED: September, 1988

I. IMPROVED SHEET PROPERTIES

A. Objective: Improve the physical characteristics and blend properties of reconstituted sheet materials.

B. Results:

1. ART Project - POL cigarettes to evaluate the acceptability of using half of the ART stems in RL are being processed through Semiworks make/pack. Pilot RL is being used as both the control and test sheet since the limited quantities of ART pilot plant spent stems preclude a Park 500 trial. Utilization of half of the projected available ART stems equates to 6 1/2% of the RL feedstock.

   POL quantities of pilot RL have also been made at the full ART stem utilization level (13% of the RL feedstock). Separate sheets were made using ART stems dried by two different modes, i.e., stems directly dried in a rotary dryer after leaving the ART absorber and ART stems subjected to an IS treatment (superwetting and Hauni tunnel superheating prior to drying). Small-scale cigarettes containing these sheets have been submitted for analyticals and will be evaluated by the Flavor Development panel to determine whether IS treatment enhances ART stem acceptability in RL, and whether POL evaluation of the full ART stem inclusion level is warranted at this time.

   ART stems were used to replace 26% of the RCB feedstock (utilizes half of the ART stems) in RCB handsheets. Test sheets were made three ways, i.e., ART stems replacing burley stems, replacing production dust, and replacing both (50/50). Since RCB does not normally contain bright stems, and since the latter two formulations represent higher total stem content, "special control" handsheets were also made with virgin bright stems. These sheets are being subjectively screened in handmade 100% cigarettes.

2. Humectants - The POL cigarettes for the evaluation of glycerin-free blends have been rejected for tar delivery. Due to the age (~1 year) of the special glycerin-free Production sheet materials, ET and ESB used for the test cigarette, fresh samples of these materials will be produced for use in a cigarette remake. The remade sheet materials, etc., will be screened for subjective acceptability prior to their use in the POL blends.

   Small scale cigarettes of first-round PG/glycerin-free blends are being subjectively screened; initial results are promising.

Pilot RL sheets containing individual humectants have completed survivability trials in Semiworks. Data analysis is in progress.

C. Plans:

1. Insure the availability of pilot RL containing ART stems to support POL testing.

2. Determine whether Hauni thermal treatment enhances ART stem subjective acceptability in RL; determine the subjective effects of adding ART stems to RCB.

3. Produce RCB handsheets to evaluate the subjective benefits of increased sugars in glycerin-free (CT-free) formulations.

II. SUBJECTIVE MODIFICATION OF RL

A. Objective: Improve or modify the subjective character of RL.

B. Results:

1. Dry Flavor Replacement - Flavor Development has tied individual sugar levels in liquid flavors to the degree of pre-extraction roasting. This is a reiterative process in that sugar values are reported back to the vendors (Chart, Madis, and Takasago); the vendors in turn make process adjustments and submit new native extract samples for analysis. Coinciding sugar analyses should improve subjective parity among the three sources.

2. Modified 150B - The electronics for the Branson ultrasound unit were installed and piping modifications made to allow installation of the ultrasound processing cell, when received, without pilot plant downtime. The size service moyno pump was rebuilt to provide the required process pressure.

C. Plans:

1. Produce pilot RL to evaluate liquid flavors, as available.

III. CIGARETTE PAPER DEVELOPMENT

A. Objective: Support development of proprietary low sidestream cigarette papers.

B. Results:

1. Handsheets - Installation of equipment in the new cigarette paper handsheet laboratory is completed, and the first handsheets have been made.

2. Pilot Trials - Trials were conducted at the University of Maine to produce cigarette papers on their pilot machine (12 inches wide; 30 feet/minute). Equipment modifications and process adjustments were made as necessary to achieve satisfactory sheet appearance and the desired machine-direction fiber alignment. Low chest consistencies were required to prevent roping of the long flax fibers. A headbox fiber consistency of 0.2% gave excellent sheet formation and eliminated visual pinholes. A dandy roll was installed to improve formation and reduce porosity.

   Sheets were produced at normal cigarette paper porosity (~35 ml/min Coresta), but the low porosity target (13) for the experimental paper program was more difficult to attain. Some papers were made at standard weight (25 gm/m^2), but the majority were run at 40 gm/m^2 to reduce porosity. Calcium carbonate filler targets (30%) were met. Increased refining resulted in 40 gm paper at a porosity of 19 using Pfizer Abacar 5970 carbonate (2.0 microns); a porosity of 12 was achieved on the same stock using Pfizer Multiflex MM carbonate (0.07 microns).

C. Plans:

1. Produce handsheets to evaluate ultrarefining, a wide weight length distribution and paper compaction as means of reducing paper porosity.

2. Arrange a second set of trials at Maine for November.